

Remarks

The Applicants note with appreciation the withdrawal of the §103 rejection over JP '231.

The Applicants have amended Claims 1 and 6. Claim 1 has been amended to replace the transitional phrase “consisting essentially of” with “comprising.” Similarly, Claim 6 has been amended to replace the transitional phrase “consists essentially of” with “comprises.” Both of Claims 1 and 6 have also been amended to recite that the stainless steel is “free of Nb.” Support may be found throughout the Applicants' Specification, such as on page 20 in the last paragraph wherein 0.5% or less of Nb “may be contained” in the steel. This disclosure means that Nb can be present in an amount of up to 0.5% or not present at all. In other words, the steel can be “free of Nb.” Also, the Applicants invite the Examiner's attention to Table 1 on page 65 wherein the steel composition does not contain Nb or is “free of Nb.” Similarly, Table 3 provides steels 2 and 3 that do not contain Nb. Finally, the Applicants invite the Examiner's attention to Table 5 wherein steels 6, 7, 8, 11 and 12 are free of or do not contain Nb. Entry into the official file is respectfully requested.

Claims 1, 2, 4 – 11, 13 and 14 stand rejected under 35 USC §103 over JP '462. The Applicants note with appreciation the Examiner's helpful comments hypothetically applying JP '462 to those rejected claims. The Applicants nonetheless respectfully submit that JP '462 is inapplicable.

JP '462 calls for the presence of Nb in an amount of 0.1 to 0.8% to obtain high temperature strength. This teaching may be found in paragraph [0028] of JP '462. Also, the table in JP '462 contains a number of examples and comparative examples, all of which contain substantial quantities of Nb. The presence of those quantities of Nb allows for JP '462 to obtain the desired high temperature strength.

There are complications associated with the addition of Nb which further call for the addition of Mg to prevent the aging deposit of Nb. Nonetheless, JP '462 requires the presence of Nb to achieve the above-mentioned high temperature strength.

The Applicants not only do not require Nb as noted in the rejection, the Applicants specifically exclude Nb in Claims 1 and 6. The Applicants can achieve the low yield strength which exhibits superior workability which is an advantageous feature of the claimed subject matter. This can be achieved without the presence of Nb. The exclusion of Nb is completely contrary to the teachings of JP '462 which specify a minimum of 0.1% Nb to achieve the desired objectives of JP '462. Accordingly, the Applicants respectfully submit that one skilled in the art would have no incentive to look to JP '462 which requires the presence of at least 0.1% Nb relative to the Applicants' claimed subject matter which specifically excludes Nb. Inasmuch as JP '462 leads those skilled in the art in a direction completely different from that taken by the Applicants, the Applicants respectfully submit that such teachings constitute "teaching away" which is compelling evidence of non-obviousness.

Also, the rejection comments that "the cited reference JP '462 closely meets the claimed composition and therefore, at least 50% of the total P content is precipitated." However, JP '462 and Claims 1 and 6 are not to be regarded as the same because of their presence or absence of addition of Nb and Mg.

Further, Nb, which is indispensable in JP '462, forms carbides (NbC and M_6C) and nitrides (NbN). That is to say, it is presumed that because some portion of carbon and nitrogen, which combine with Ti, is precipitated in steel as Nb-based carbonitrides and this increases the effective Ti content, which can precipitate as phosphide, the precipitation of phosphide is fostered in JP '462 (FeTiP becomes readily precipitated in JP '462).

As mentioned above, Nb is considered to cause effects, although indirectly, in no small way on FeTiP precipitation. Consequently, one skilled in the art would not glean from the result of Fig. 2 of JP '462, wherein Nb is added by as much as 0.5% that 50% or more of P can be easily precipitated by the Applicants' Claims 1 and 6 (wherein FeTiP hardly precipitates), wherein Nb is not added. JP '462 suppresses precipitation of FeTiP during hot rolling by adding Mg in an amount of 0.0005-0.01% and prevents precipitation of Nb during aging. Thus, the object of JP '462 is the opposite of that of Claims 1 and 6.

According to Claims 1 and 6, precipitation of P by 50% or more was made possible by optimizing the specified composition and the temperature for annealing a hot-rolled sheet. Optimization of a hot-rolled sheet annealing temperature is not disclosed at all in JP '462.

In JP '462, there is no description of the crystal grain size of a cold-rolled and annealed sheet. Also, the condition of finish annealing is not disclosed. According to Claims 1 and 6, the desired characteristic is secured by controlling precipitation behaviors of FeTiP in the hot-rolled sheet and causing the grain size of the grains in the finish annealed sheet to be 6.0 or more.

It is not possible to expect the characteristics of Claims 1 and 6 from JP '462 which is in a state wherein grain size is not disclosed at all. The manufacturing process is not clearly indicated. Thus, it is not possible to assume that such a characteristic would necessarily be present. Withdrawal of the rejection of Claims 1, 2, 4-11, 13 and 14 is respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,



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